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Collective efficacy or team outcome confidence? Development and validation of the Observational Collective Efficacy Scale for Sports (OCESS)

Fransen, Katrien[1], Kleinert, Jens[2], Dithurbide, Lori[3], Vanbeselaere, Norbert[4], & Boen, Filip[1].

[1] Department of Kinesiology, KU Leuven, Leuven, Belgium

[2] Institute of Psychology, German Sport University Cologne, Köln, Germany

[3] School of Health and Human Performance, Dalhousie University, Halifax, Canada

[4] Center for Social and Cultural Psychology, KU Leuven, Leuven, Belgium

E-mail address of lead author: Katrien.Fransen@faber.kuleuven.be

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Abstract

Although collective efficacy has been demonstrated to be an important precursor of team performance, there remains some ambiguity concerning its assessment. Therefore, the main aim of the present study was to test the validity of previous collective efficacy measures. An online survey was completed by 4,451 Flemish players and coaches from nine different team sports. The results revealed two distinct and reliable scales; process-oriented collective efficacy (i.e., the confidence in the team's skills to accomplish processes that could lead to successes) and outcome-oriented team confidence (i.e., the confidence in the team's ability to obtain a goal or win a game). Furthermore, we established the validity of a 5-item Observational Collective Efficacy Scale for Sports (OCESS) as short measure of process-oriented collective efficacy. Because the OCESS only includes observable behaviors, this scale has the potential to be a starting point for the development of a continuous in-game measure of collective efficacy.

Keywords: instrument development, team confidence, continuous measure, team sports, dynamic measurements, in-game variation

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The performance of athletes can vary strongly during a sports game. Players' confidence in the team's capabilities is often mentioned as one of the factors that characterize these performance variations throughout the game. For example, a sudden collapse in team performance is often attributed to a drop in the team's confidence. Conversely, team confidence is assumed to be a prerequisite for fighting back when the team is lagging behind. Arsenal coach Arsene Wenger adds that "confidence is the easiest thing to lose in football and the most difficult to win back" (Mangan, 2013). Bandura (1997, p. 477) termed this confidence 'collective efficacy', defined as "the group's shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment."

Collective Efficacy as a Dynamic Construct

Bandura (1997) stated that collective efficacy has an effect on what a team chooses to do, how much effort is instilled into a task, and how persistent the team is. These claims have been supported in research showing that teams with strong collective efficacy beliefs tend to set more challenging goals (Silver & Bufanio, 1996), exert more effort, and persist longer in the face of adversity (Greenlees, Graydon, & Maynard, 1999). As a result, a positive relationship has been revealed between collective efficacy and sport performance; the more the players believe in the team's capacities, the better they perform and vice versa (Dithurbide, Sullivan, & Chow, 2009; Hodges & Carron, 1992; Keshtan, Ramzaninezhad, Kordshooli, & Panahi, 2010; Myers, Feltz, & Short, 2004; Myers, Payment, & Feltz, 2004).

It is important to emphasize that collective efficacy is not a fixed trait, but a dynamic construct (Myers & Feltz, 2007). In other words, the individual's beliefs in the capabilities of his or her team may change in the course of weeks, days, or even during a game. Especially these changes in the course of a competition seem often responsible for winning or losing. To

investigate this close link between collective efficacy and performance, Bandura (1997, p. 67) stated that "the relationship between efficacy beliefs and action is revealed most accurately when they are measured in close temporal proximity." Myers and colleagues (2007) added that only research designs allowing for simultaneous measures of both efficacy and performance would provide maximal information about their dynamic relationship during a competition. However, in contrast with these guidelines and collective efficacy's dynamic nature, the concept has traditionally been measured as a trait concept or at best before or after a game, but not during a game. The only exception is a study by Edmonds, Tenenbaum, Kamata, and Johnson (2009), who attempted to measure collective efficacy beliefs of adventure racing teams at three time points during the race. Their results supported the dynamic nature of collective efficacy; as the collective efficacy of the more successful teams increased throughout the race, subsequent performance improved, and vice versa for the less successful teams.

How to Measure Collective Efficacy? Resolving the Ambiguity

According to the definition of Bandura (1997), efficacy beliefs are future-oriented judgments about capabilities to organize and execute the courses of action. In other words, efficacy measures have to address the skills, properties, or other descriptions of (inter-) personal conditions that assist in successful performance. However, the existing collective efficacy research is characterized by inconsistencies in the manner in which collective efficacy is conceptualized, operationalized, and measured (Shearer, Holmes, & Mellalieu, 2009). For instance, current measures of collective efficacy vary with respect to the extent in which they correspond to the original definition of efficacy by Bandura (1997). In line with previous research (Collins & Parker, 2010), we can distinguish two types of measures.

The first type evaluates the athletes' confidence in their team's skills to accomplish the processes that can lead to success (i.e., process-oriented, e.g., "I believe that the players in my

team will encourage each other during the game"). Because this type of measure addresses the belief in the team's abilities to optimize the process (e.g., items measuring motivational and communication skills that help a team to be successful), it conforms to Bandura's original definition of collective efficacy. We will term this measure "collective efficacy" (in the proper process-oriented sense). Collective efficacy thus focuses on athletes' confidence in the process of their own team, rather than comparing their own abilities with those of the opposing team.

In contrast, the second type of measure focuses on outperforming the opponent and refers to athletes' confidence in the abilities of their team to obtain a certain outcome (i.e., outcome-oriented, e.g., "I believe that my team will outplay the opposing team and win this game"). This measure refers to the confidence in the outcome rather than the confidence in the process and focuses on the comparison with the other team, rather than on the own team. Therefore, this measure is not congruent with Bandura's original definition of collective efficacy. We will therefore term this outcome-oriented measure "outcome-oriented team confidence", shortened as "team outcome confidence". Despite the fact that this outcome-oriented team confidence does not measure collective efficacy as originally defined, a number of studies used these measures to allegedly assess collective efficacy (e.g., Chen et al., 2002; Fransen et al., 2012; Spink, 1990; Tasa, Taggar, & Seijts, 2007; Vargas-Tonsing & Bartholomew, 2006). Although previous research (Myers & Feltz, 2007) already recommended against single-item performance measures, typically, the one-item measures used in these studies are outcome-oriented rather than process-oriented, and as such, they measure team outcome confidence rather than collective efficacy (e.g., "What placing do you expect to attain?" or "To what extent do you believe that the team can finish in at least the top 10 teams?"). For example, Edmonds and colleagues (2009) attempted to measure the dynamic evolution of collective efficacy in an adventure race by using the one-item measure "How

confident are you in the team's ability in executing the mountain biking portion of the race in order to secure a top-place finish?" Because this item is more outcome-oriented than process-oriented, the authors actually assessed the dynamic variation in team outcome confidence rather than the variation in collective efficacy.

Nevertheless, several studies did assess collective efficacy in accordance with the original process-oriented definition of Bandura (1997). An example of a widely used measure of collective efficacy is Short, Sullivan, and Feltz's Collective Efficacy Questionnaire for Sport (CEQS; 2005). The CEQS represents collective efficacy as a multidimensional construct based on Bandura's (1997) argument that efficacy beliefs include beliefs in the physical tasks but also beliefs in the capability to manage thoughts, actions, emotions, and motivation (Dithurbide & Feltz, 2012, p. 260). The CEQS (2005) comprises a five-factor structure (i.e., five subscales) measured with four items each. These five subscales include: Ability (e.g., "to outplay the opposing team"), Effort (e.g., "to play to its capabilities"), Persistence (e.g., "to persist when obstacles are present"), Preparation (e.g., "to devise a successful strategy"), and Unity (e.g., "to be united").

Given the ambiguity in the current literature concerning the assessment of collective efficacy, the main aim of the present study is to investigate the validity of the measures used to assess collective efficacy. As mentioned above, the one-item measures used to assess collective efficacy often focus on the outcome (i.e., performing better than the opponent), and as such assess outcome-oriented team confidence rather than process-oriented collective efficacy. Consequently, these outcome-oriented one-item measures cannot be used as reference measurement of collective efficacy in team sports. In line with this argument, the validation study by Short and colleagues (2005) revealed a lower correlation between the Ability subscale and the other subscales (.59 - .78) than the correlation among the other subscales (.76 - .94). Looking more closely at the factors and items of the CEQS (Short, et al.,

2005), it can be inferred that the items of the Ability subscale are outcome-oriented, rather than process-oriented (e.g., "Rate your team's confidence, in terms of the upcoming game or competition, that your team has the ability to outplay the opposing team"). Despite the evidence found for the internal consistency of each subscale of the CEQS, the conceptual unity of these different subscales can be questioned. Once clarity is obtained about the reliability of the different collective efficacy measures, the second aim of our study can be realized; the validation of a new and short five-item scale of collective efficacy (Observational Collective Efficacy Scale for Sports; OCESS) that can be used as a starting point for more dynamic measures of collective efficacy.

Dynamic Measurements Through Observations: The OCESS

While striving toward a more dynamic measurement of collective efficacy, researchers have experienced a practical barrier; in team sports it is not possible to interrupt a player repeatedly during a game to measure his or her collective efficacy beliefs (Myers, Paiement, & Feltz, 2007). Therefore, Edmonds and colleagues (2009) only considered a few time points during a contest. However, in order to advance the knowledge of the dynamic character of collective efficacy, one should strive for more frequent measurements throughout the game. Because working with questionnaires appears to be a major barrier for realizing a continuous measurement of collective efficacy during a contest, observations could provide a viable alternative.

A first step toward an observational measure of collective efficacy was taken by Fransen and colleagues (2012). These authors surveyed 33 top-level volleyball coaches on what they believed to be the most important sources of team outcome confidence (i.e., "I believe that my team will win the game") in their sport. Subsequently, 2365 volleyball coaches and athletes evaluated the extent to which these sources had the power to predict team outcome confidence. The data revealed five sources that were perceived as very

important by both coaches and athletes: a) reacting enthusiastically when making a point; b) having leader figures in the team who believe that their team will win this game and express this on the court; c) having both players in the game and on the bench who cheer enthusiastically; d) encouraging each other during the game; and e) communicating tactically during the game. All these behaviors are clearly process-oriented. Having confidence that the own team has the qualities to succeed in these five behaviors could therefore represent process-oriented collective efficacy.

In the present study we develop a new scale based on these five sources, named the Observational Collective Efficacy Scale for Sports (OCESS). The aim of the present study is to assess whether this short scale constitutes a valid measure of process-oriented collective efficacy in different team sports. If it does, the 5-item OCESS would offer a valid alternative to the 20-item CEQS for assessing collective efficacy in sport whenever time available for administering long questionnaires is limited. Furthermore, because all five items represent observable behaviors, the OCESS would allow future assessment of the evolution of players' collective efficacy beliefs throughout a contest by observations rather than questionnaires. Such a measure could highlight the dynamic nature of collective efficacy during a game and provide more insight into how to attain and maintain high collective efficacy.

Hypotheses

Given the ambiguity in the existing literature concerning the assessment of collective efficacy, the main purpose of the present study is to investigate the validity of the measures currently used to assess collective efficacy in sports teams. In line with our conceptual reasoning above, we hypothesize that the Ability subscale assesses outcome-oriented team confidence (analogous to the outcome-oriented one-item measures), rather than process-oriented collective efficacy. By contrast, we expect the other four subscales of the CEQS to

form a valid and reliable reference measurement of process-oriented collective efficacy as defined by Bandura (1997).

Once a reliable reference measurement of collective efficacy is obtained, a second aim of our study can be realized: the validation of our newly developed five-item scale of collective efficacy (Observational Collective Efficacy Scale for Sports; OCESS) within different team sports. Two hypotheses can be formulated with regard to this aim. First, we hypothesize that the OCESS and the CEQS (subscales 2-5) are strongly correlated (i.e., $r >$ .70), attesting that the OCESS measures process-oriented collective efficacy instead of outcome-oriented team confidence. Second, the convergent and divergent validity of the OCESS is examined by comparing the influence of demographic characteristics respectively with the first subscale and the last four subscales of the CEQS. If supported, this OCESS, which includes only observable behaviors, offers a starting point for the design of a continuous measure of players' collective efficacy beliefs during the game through observation instead of through the use of traditional questionnaires.

Method

Procedure

The database of the Flemish Trainer School (i.e., organization responsible for sport-specific schooling of coaches in Flanders) was used to invite 5,535 qualified coaches out of nine different team sports to participate in our study. These coaches were asked to complete a web-based questionnaire and to motivate their players to complete the player-specific version of the questionnaire. In order to assure variability within our sample, we also contacted non-qualified coaches and their teams through the different Flemish sport federations. The coaches and players who did not respond were sent a reminder two weeks later. Informed consent was obtained from all participants. No rewards were given for participation in our study and all participants were guaranteed full confidentiality.

Participants

In total, 4,451 participants (3,193 players and 1,258 coaches) completed our questionnaire. This corresponds to an approximate response rate of 27%. These participants played or coached in 2,366 different teams. More detailed information on the participants can be found in Table 1. The sample included participants from nine team sports in Flanders; basketball, handball, hockey, ice hockey, netball, rugby, soccer, volleyball, and water polo. Table 2 contains the descriptive characteristics for the respondents of each of the nine team sports. Data from this sample have been used in another research study (Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014), but examined different variables and research questions.

Measures

Collective efficacy. Two measures of collective efficacy were included in our questionnaire. First, the Collective Efficacy Questionnaire for Sports (CEQS; Short, et al., 2005), including five subscales, each consisting of four items. In line with the suggestions of Myers and Feltz (2007), each of the items begins with the stem: "Rate your confidence, in terms of the upcoming game or competition, that your team has the ability to…" Participants assessed the items on a 7-point scale anchored by 1 (*not at all confident*) and 7 (*extremely confident*).

The second collective efficacy measure included in our study was our newly developed five-item Observational Collective Efficacy Scale for Sports (OCESS), including the most important sources of team outcome confidence (Fransen, et al., 2012). It is important to note that, although the items of the OCESS are intended to be used as an observational measurement instrument in the future, in the current study, the scale is still in a self-evaluative questionnaire form. The items included in the OCESS are "react enthusiastically when making a point," "have leader figures in the team who believe that we will win this game and

express this on the court," "have both players in the game and on the bench who cheer enthusiastically," "encourage each other during the game," and "communicate a lot tactically during the game." In analogy with the CEQS, each of the items was assessed on a 7-point scale ranging from 1 (*not at all confident*) to 7 (*extremely confident*) and each item began with the stem: "Rate your confidence, in terms of the upcoming game or competition, that your team has the ability to…"

Team outcome confidence. Outcome-oriented team confidence was measured using five one-item measures that assess the confidence that the team will win the game, lose the game, or realize its goals. These items are a general representation of the measures mainly used in previous research studies (Myers & Feltz, 2007, for a review). To determine the difference between an individual stem (i.e., "*I* believe that our team…") and the team-focused stem (i.e., "*Our team* believes that we…"), we included items with both stems for the confidence in winning or losing the upcoming game.

Other measures. Besides several background characteristics (e.g., sex, age, years of experience), we assessed some performance related measures as well, such as position of the team in the ranking of the ongoing season and the score and quality of the play during the last game.

Results

In order to validate our new OCESS scale as a measure of collective efficacy in sports teams, we first investigated the validity of the measures currently used to assess collective efficacy for the Flemish context.

Investigation of the Validity of the Flemish Version of the Collective Efficacy Questionnaire for Sports (CEQS)

Factor analyses. A Confirmatory Factor Analysis (CFA) conducted on the 20-item CEQS questionnaire, including the five subscales, for all 4,451 players and coaches, revealed

an inadequate fit with the data (χ^2 = 5620; *df* = 165; $p < .001$; *GFI* = .87; *AGFI* = .84; *RMSEA* = .09). We therefore conducted an Exploratory Factor Analysis on the whole sample (4,451 players and coaches within all sports) to identify the structure underneath the 20 items of the CEQS scale. It has been established that the scree plot is a reliable criterion for component selection with samples of more than two hundred participants (Stevens, 2002). The scree plot suggested that two independent factors should be extracted which explained 61% of variance. An item was retained to construct a factor when it had a minimum loading of .40, without having a cross loading higher than .40 on another factor. This resulted in the deletion of three items from different subscales; the items "Be ready" and "Devise a successful strategy" were deleted from the subscale Preparation, the item "Perform under pressure" was deleted from the subscale "Persistence". The first component, accounting for 52% of the variance in participants' responses, consisted of 13 items from the subscales of Effort, Persistence, Preparation, and Unity. The second component included the four items of the CEQS subscale of Ability.

Intercorrelations between the subscales of the CEQS. In order to provide a better insight into the underlying structure of the five subscales of the original CEQS, Table 3 presents the correlation matrix of all subscales of the CEQS scale. Cronbach's α coefficients are provided in parentheses on the diagonal as estimates of internal consistency.

The internal consistency of all five subscales was high (all Cronbach's α's > .83). As can be seen in Table 3, subscales 2, 3, 4, and 5 are strongly correlated (all $r > .69$). However, the Ability subscale is only moderately correlated (i.e., $r < .60$) with the other subscales. This confirms the previous EFA that this subscale measures something different than the other subscales.

The relation between CEQS and outcome-oriented team confidence. To investigate the internal validity of the different subscales of the CEQS we explore the

relationship with five one-item measures of outcome-oriented team confidence. Table 4 presents all correlations between these five one-item measures and the five subscales of the CEQS (Short, et al., 2005).

The outcome-oriented beliefs (i.e., winning/losing the game) correlate strongly with the Ability subscale. Also, the item assessing the belief in obtaining a goal correlates more strongly with the Ability subscale than with the other four subscales. The subscales Effort, Persistence, Preparation, and Unity correlate only moderately with outcome-oriented team confidence (all $r < .49$). The internal consistency of this newly constructed scale (subscales 2-5 of the CEQS) is very high (Cronbach's $\alpha = .95$). Additional analyses revealed high correlation between the items: "*I* believe that our team will win the game" and "*Our team* believes that we will win the game" ($r = .80$; $p < 0.01$).

The Observational Collective Efficacy Scale for Sports (OCESS)

The findings above make clear that the subscales Effort, Persistence, Preparation, and Unity of the CEQS form a reliable measure of process-oriented collective efficacy. This brings us to the second purpose of our study, namely to determine whether our newly developed five-item OCESS can be considered as an adequate measure for process-oriented collective efficacy. The Cronbach's α of the 5-item OCESS is .85, indicating a high internal consistency.

Correlation with CEQS. Table 5 shows the correlations between the OCESS and the CEQS, including correlations with the full scale as well as correlations with the different subscales. In addition, the correlation with the process-oriented part of the CEQS (subscales 2-5) is reported. The results reveal high correlations between the OCESS and CEQS subscales 2, 3, 4, and 5, which together represent the process-oriented part of the CEQS ($r = .79$). In contrast, only a moderate correlation with the CEQS Ability subscale emerged.

Relation with demographic variables. In order to further test the validity of the OCESS as measure of collective efficacy, we explored both convergent and discriminant validity by comparing the influence of demographic variables on different scales. With regard to the convergent validity, we tested whether the OCESS and the process-oriented part of the CEQS (subscales 2-5) are similarly related with the demographic variables. To examine the discriminant validity, we tested whether the OCESS and the first subscale of the CEQS (as measure of the outcome-oriented team confidence) are related with the predictors in a different way.

We conducted three regression analyses with the different demographic variables as predictors (see Table 6). The Ability subscale of the CEQS (presumably a measure of team outcome confidence), the process-oriented part of the CEQS (subscales 2-5), and the newly developed OCESS served as criterion variables. Because the large sample size (N = 4450) goes along with an extremely high statistical power, we will consider only the significant relationships with a β-value above .20 (explaining at least 4% of the variance). The regression analyses in Table 6 reveal that the different demographic characteristics have a very similar relation with the two criteria that we consider as measures of collective efficacy (i.e., subscales 2-5 of the CEQS and the OCESS). Both the place in ranking of the own team and the playing level of the own team in the game of last weekend are significantly, and in the same direction, related with the two collective efficacy scales, which supports the convergent validity of our OCESS scale. By contrast, two different demographic variables, namely the place in the ranking of the next game's opponent and the score of the first game against that opponent, were significantly related to outcome-oriented team confidence. This differential impact of demographic variables supports the discriminant validity of the OCESS scale.

Discussion

The results of the present study question the internal validity of the measures currently used to assess collective efficacy. Two types of measures could be distinguished: process-oriented collective efficacy (i.e., the confidence in the team's skills to accomplish the processes that could lead to successes) and outcome-oriented team confidence (i.e., the confidence in the team's ability to obtain a goal or win a game). Furthermore, our findings provide support for our contention that the developed five-item OCESS can be used as a valid measure of process-oriented collective efficacy.

First, the results of this study demonstrated that the internal consistency of each of the five subscales of the Collective Efficacy Questionnaire for Sports (Short, et al., 2005), as well as the internal consistency of the full scale, was high. On the other hand, the originally proposed five-factor structure showed only a moderate fit to the data. The Ability subscale emerged as a separate factor with relatively lower correlations with the other subscales, and with different relations with the demographic variables. This Ability subscale was found to assess outcome-oriented team confidence, rather than process-related collective efficacy, given its high correlations with the outcome-oriented one-item measures. The combined subscales Effort, Persistence, Preparation, and Unity seem to constitute a measure for process-related collective efficacy. Both findings are in line with our hypothesis.

Second, the present findings suggest that the OCESS is a valid measure of process-oriented collective efficacy in different team sports. First, the OCESS scale has a high internal consistency. Second, high correlations have been established with the four subscales of the CEQS that assess process-oriented collective efficacy ($r > .68$). In contrast, only a moderate correlation emerged with the Ability subscale. This indicates that the OCESS is a measure of process-oriented collective efficacy rather than a measure of outcome-oriented team confidence. The convergent validity of the OCESS was further supported by the similar

relations between demographic characteristics and both the OCESS scale and the process-oriented part of the CEQS. In contrast, these demographic characteristics had different relations with the Ability subscale, supporting the discriminant validity, and providing further evidence that the Ability subscale of the CEQS does not measure process-oriented collective efficacy beliefs that are congruent with Bandura's (1997) definition of the construct.

In addition, in this original definition, Bandura (1997) referred to collective efficacy as "a group's shared belief". Nevertheless, previous research argued that the best way to capture efficacy beliefs in questionnaires is by assessing the individual's perception of the team's capabilities (Bandura, 1997; Myers & Feltz, 2007; Shearer, Holmes, & Mellalieu, 2009). It should be noted that the OCESS contains items that express interaction or interpersonal behavior (e.g., communicating tactically, encouraging each other). These behaviors can be interpreted as "shared" behavior, and therefore align more closely with the original definition of Bandura (1997).

Because all the items in the OCESS refer to behaviors that can be observed, this scale offers a starting point for the development of a continuous observational instrument of collective efficacy during a competitive game. Because this new measure of collective efficacy can be completed by observers, it has the potential to overcome the limitations of traditional questionnaires that have to be completed by the players themselves. Moreover, such observations allow assessing the dynamical changes of collective efficacy (e.g., in critical periods during a game).

Our study includes strengths and limitations, so the results should be interpreted accordingly. A particular strength of the study is the large sample size of both coaches and athletes, as well as the diversity of sport and competition level. Having such a large and diverse sample increases the applicability of the results to various sport settings. In addition,

the five-item OCESS offers a valid alternative to one-item measures for assessing collective efficacy in sport whenever time available for administering long questionnaires is limited.

A potential limitation associated with our study is the use of an online survey to gather the data, which resulted in participation of individual players and coaches rather than complete teams. Because the 4,451 participants were active in 2,366 different teams, it was not possible to establish whether these collective efficacy beliefs are shared within the team. Collective efficacy is a group-level construct that is typically measured at the individual level and then, when appropriate, aggregated to the group or team level for subsequent analysis. This study only measured collective efficacy beliefs at the individual level of analysis. Further research is required to explore whether a similar pattern will be obtained at the group-level of analysis.

A second limitation regards to the design of our study. Given our cross-sectional study design, we are not able to give evidence for the amount of stability or instability of the OCESS over time. Because the OCESS (in an observational form) should be able to capture changes in collective efficacy (e.g., during a game or between subsequent games), the measurement has to be sensitive for variations. On the other hand, given the stability of external and internal circumstances, we expect high test-retest-reliability. More clarity should be obtained with further studies.

Another suggestion for future research refers to the validation of the OCESS as observational measure of collective efficacy. The present manuscript provides the first necessary step in this validation process by demonstrating that the *self-reported* efficacy behaviors (i.e., the OCESS) are highly correlated with collective efficacy, as measured by the process-oriented part of the CEQS. Future work is required to complete the final step in this validation process, namely to establish a high correlation between the *self-reported* efficacy behaviors and the *observer-reported* efficacy behaviors in a real game setting (both assessed

by the OCESS). To obtain a high inter-observer reliability, it will be essential to define and standardize the observation of the five behaviors for each specific sport, as well as to train the observers in this behavioral assessment.

The findings of the present study contribute both to theoretical knowledge and to coaching practice. First, the results provide clear insight into the conceptual distinction between process-oriented collective efficacy and outcome-oriented team outcome confidence. Hopefully, these findings result in more conceptual clarity in future collective efficacy research. Furthermore, these findings have the potential to provide the basis for the development of a dynamic collective efficacy measurement based on observations guided by the OCESS. Such a measure could provide a better insight in the dynamic nature of collective efficacy during a game and its relation with performance.

Second, this continuous measure would constitute an added value for the coaching practice by providing coaches with more insights into how to attain and maintain high collective efficacy standards within their teams. In addition to technical and tactical scouting, this mental scouting of players can become an essential tool to make important decisions in the course of a game.

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Table 1

Sample characteristics

	Participants	M_{Age} (years)	$M_{Experience}$ (years)	Team gender	Level	
Coaches	1,258 (28%)	41.94	13.97	905 ♂ (72%)	90 E	(7%)
				353 ♀ (28%)	268 N	(21%)
					613 P	(49%)
					102 RG	(8%)
					22 RC	(2%)
					163 Y	(13%)
Players	3,193 (72%)	23.92	14.21	1,915 ♂ (60%)	177 E	(6%)
				1,278 ♀ (40%)	836 N	(26%)
					1,733 P	(54%)
					209 RG	(7%)
					122 RC	(4%)
					116 Y	(4%)
Total sample	4,451	29.01	14.14	2,820 ♂ (63%)	267 E	(6%)
				1,631 ♀ (37%)	1,104 N	(25%)
					2,346 P	(53%)
					311 RG	(7%)
					144 RC	(3%)
					279 Y	(6%)

Note. ♂ = male; ♀ = female; E = elite level; N = national level; P = provincial level; RG = regional level; RC = recreational level; Y = youth teams.

Table 2

Sport specific sample characteristics

	Participants	M_{age} (years)	$M_{Experience}$ (years)	Male team (♂) / Female team (♀)	Function Players (P) / Coaches (C)
Basketball	1,959 (44%)	27.40	14.67	1,332 ♂ (68%)	1,551 P (79%)
				627 ♀ (32%)	408 C (21%)
Volleyball	1,287 (29%)	29.77	14.35	521 ♂ (41%)	919 P (71%)
				766 ♀ (59%)	368 C (29%)
Soccer	589 (13%)	33.88	13.05	541 ♂ (92%)	249 P (42%)
				48 ♀ (8%)	340 C (58%)
Hockey	127 (3%)	27.39	13.65	68 ♂ (53%)	110 P (87%)
				59 ♀ (47%)	17 C (13%)
Netball	118 (3%)	27.53	15.27	64 ♂ (54%)	85 P (72%)
				54 ♀ (46%)	33 C (28%)
Handball	116 (3%)	29.64	13.67	80 ♂ (69%)	76 P (65%)
				36 ♀ (31%)	40 C (35%)
Water polo	99 (2%)	26.93	13.40	84 ♂ (85%)	84 P (85%)
				15 ♀ (15%)	15 C (15%)
Rugby	84 (2%)	28.10	7.59	67 ♂ (80%)	60 P (71%)
				17 ♀ (20%)	24 C (29%)
Ice hockey	72 (2%)	27.76	13.37	63 ♂ (87%)	59 P (82%)
				9 ♀ (13%)	13 C (18%)
Total sample	4,451	29.01	14.14	2,820 ♂ (63%)	3,193 P (72%)
				1,631 ♀ (37%)	1,258 C (28%)

Table 3

Intercorrelations between different subscales of the CEQS (Short et al., 2005). The Cronbach's α coefficient of each subscale can be found on the diagonal in parentheses.

	Subscale 1 Ability	Subscale 2 Effort	Subscale 3 Persistence	Subscale 4 Preparation	Subscale 5 Unity
Subscale 1 Ability	*(.93)*				
Subscale 2 Effort	.51**	*(.83)*			
Subscale 3 Persistence	.56**	.79**	*(.83)*		
Subscale 4 Preparation	.59**	.75**	.69**	*(.84)*	
Subscale 5 Unity	.52**	.80**	.79**	.73**	*(.84)*

** $p < .01$

Table 4

Correlations between the subscales of the CEQS and five one-item measures of outcome-oriented team confidence

	Subscale 1 Ability	Subscale 2 Effort	Subscale 3 Persistence	Subscale 4 Preparation	Subscale 5 Unity
I believe that our team will win the upcoming game	.77**	.37**	.40**	.44**	.38**
I believe that our team will lose the upcoming game	-.73**	-.34**	-.37**	-.41**	-,35**
I believe that our team will obtain its goal in the upcoming game	.59**	.47**	.48**	.49**	.49**
Our team believes that we will win the upcoming game	.75**	.40**	.44**	.48**	.41**
Our team believes that we will lose the upcoming game	-.69**	-.35**	-.39**	-.43**	-.36**

** $p < .01$

Table 5

The correlations between the five-item OCESS (both full scale and individual items) and the CEQS (Short et al., 2005)

	Full CEQS	S1 Ability	S2 Effort	S3 Persistence	S4 Preparation	S5 Unity	S2-5
Full OCESS	.78**	.51**	.75**	.68**	.68**	.75**	.79**
1. React enthusiastically when making a point	.51**	.27**	.55**	.45**	.46**	.50**	.54**
2. Have leader figures in the team who believe that we will win this game and express this on the court	.62**	.51**	.56**	.52**	.52**	.55**	.59**
3. Have both players in the game and on the bench who cheer enthusiastically	.61**	.37**	.62**	.56**	.51**	.60**	.63**
4. Encourage each other during the game	.64**	.36**	.64**	.57**	.53**	.65**	.66**
5. Communicate a lot tactically during the game	.66**	.45**	.57**	.57**	.64**	.63**	.67**

** $p < .01$

Table 6

Regression analyses with background characteristics as predictors and CEQS and OCESS as dependent variables. The significant beta values are marked in bold.

Predictors	CEQS Subscale 1 Team outcome confidence $R^2 = .391$	CEQS Subscale 2-5 Collective efficacy $R^2 = .180$	OCESS Collective efficacy $R^2 = .130$
	β	β	β
Player/Coach	**.06***	**.13*****	.04
Sex	.03	-.06	**-.10****
Male/Female team	.01	.04	.05
Age	-.04	.02	.03
Years of experience	.01	.01	-.02
Team level	**-.04****	**-.10*****	**-.05****
Team tenure	.02	**.05****	**.06****
Place in ranking of own team	**-.18*****	**-.25*****	**-.25*****
Place in ranking of opponent	**-.33*****	**-.07****	-.02
Score of first game against same opponent	**.20*****	-.00	.00
Score of game last weekend	.03	-.01	-.00
Ranking opponent of game last weekend	**.04***	-.02	.00
Playing level own team game last weekend	**.10*****	**.23*****	**.20*****

$^{*}p < .05$ $^{**}p < .01$ $^{***}p < .001$